



Roy F. Weston, Inc.
Suite 5700
700 5th Avenue
Seattle, WA 98104-5057
206-521-7600 • Fax 206-521-7601
www.rfweston.com

MEMORANDUM

DATE: 21 December 1998

TO: David Bennett, WAM, U.S. EPA, Region X

FROM: Michelle Turner, Chemist, WESTON, Seattle
Roger McGinnis, Senior Environmental Chemist, WESTON, Seattle

SUBJECT: Validation of Chlorinated Pesticide Data
Laboratory Batch: K9805599
Site: Duwamish River

WORK ASSIGNMENT NO: 46-23-0JZZ

WORK ORDER NO.: 4000-019-038-5200-00

DOC. CONTROL NO : 4000-019-038-AAAK

cc Bruce Woods, RAP-WAM, U.S. EPA, Region X
Dena Hughes, Site Manager, WESTON, Seattle (memo only)
Kevin Mundell-Jackson, Database Management, WESTON, Seattle

The quality assurance review of four sediment samples, laboratory batch K9805599, collected from the Duwamish River has been completed. The samples were analyzed for chlorinated pesticides by Columbia Analytical Services of Kelso, Washington using EPA Method 8081. The samples were numbered.

98344022

98344025

98344028

98344035

Data Qualifications

The following comments refer to the laboratory performance in meeting the quality control criteria described in the technical specifications of the laboratory subcontract. The review follows the format described in the *National Functional Guidelines for Organic Data Review* (EPA OSWER Directive 9240.1-05, February 1994).

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QA Review Batch K9805599 (Chlorinated Pesticides)

Site. Duwamish River

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1. Timeliness

All samples met holding time criteria of 14 days for sample extraction and 40 additional days for extract analysis.

2. GC/ECD Instrument Performance

i) Retention Time Windows

Retention times of all pesticides were within windows calculated from the initial calibration.

ii) DDT/Endrin Breakdown

The percent breakdown for 4,4'-DDT and Endrin was less than 20 percent for each compound and combined breakdown was less than 30 percent on both GC columns

3. Initial Calibration

a) Individual Standard Mixtures

Retention time windows were calculated correctly.

Appropriate standards concentrations were used and peak heights of 50 to 100 percent of full scale were obtained.

Calibration factor percent relative standard deviation (%RSD) met QC criteria of 20 percent for pesticides and 30 percent for surrogates.

4. Calibration Verification

Instrument blanks and PEM samples were analyzed at the proper frequency.

The difference between actual and calculated concentrations of individual pesticides was within QC criteria of ± 25 percent

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5. Detection Limits

Instrument detection limits met project required quantitation limits with the following exceptions.

Sample	Compound	QL Goal (ug/Kg)	Reported QL (ug/Kg)
98344022	Heptachlor Epoxide	1	4
98344022	Dieldrin	2	5
98344022	DDE	1	3
98344025	alpha-BHC	1	5
98344025	beta-BHC	1	5
98344025	gamma-BHC (Lindane)	1	5
98344025	Heptachlor	1	5
98344025	Aldrin	1	5
98344025	Heptachlor Epoxide	1	12
98344025	gamma-Chlordane	1	5
98344025	Endosulfan I	1	5
98344025	alpha-Chlordane	1	5
98344025	Dieldrin	2	15
98344025	DDE	1	15
98344025	Endrin	2	10
98344025	Endosulfan II	2	10
98344025	DDD	2	10
98344025	Endrin Aldehyde	2	10
98344025	Endosulfan Sulfate	2	20
98344025	DDT	2	10
98344025	Endrin Ketone	2	5
98344025	Methoxychlor	1	5

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Sample	Compound	QL Goal (ug/Kg)	Reported QL (ug/Kg)
98344025	Toxaphene	10	500
98344028	alpha-BHC	1	5
98344028	beta-BHC	1	5
98344028	gamma-BHC (Lindane)	1	5
98344028	Heptachlor	1	5
98344028	Aldrin	1	5
98344028	Heptachlor Epoxide	1	5
98344028	gamma-Chlordane	1	6
98344028	Endosulfan I	1	5
98344028	alpha-Chlordane	1	6
98344028	Dieldrin	2	10
98344028	DDE	1	5
98344028	Endrin	2	10
98344028	Endosulfan II	2	15
98344028	DDD	2	10
98344028	Endrin Aldehyde	2	10
98344028	Endosulfan Sulfate	2	10
98344028	DDT	2	10
98344028	Endrin Ketone	2	10
98344028	Methoxychlor	1	5
98344028	Toxaphene	10	50

Where quantitation limit goals were exceeded, undetected analytes were qualified (UI) to indicate matrix interference.

6. Blanks

a) Laboratory Method Blanks

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Laboratory method blank frequency criteria were met.

No target analytes were reported in laboratory method blanks.

b) Field Blanks

No field blanks were associated with this laboratory batch.

7. System Monitoring Compounds (Surrogates)

Surrogate compound percent recovery met quality control criteria (P-project, L-laboratory) for all samples except

Sample	Compound	Percent Recovery	QC Limits
K980821-LCS	Tetrachloro-m-xylene	18	30-150 (P) 20-107 (L)

Surrogate recoveries for all associated samples were within both project and laboratory QC limits. Decachlorobiphenyl in the LCS was within QC limits. No qualifiers were based solely on the LCS surrogate recovery.

8. Matrix Spike and Matrix Spike Duplicate

Matrix spike (MS) or matrix spike duplicate (MSD) percent recovery for the following compounds were outside QC guidelines (P-project, L-laboratory).

Sample	Compound	Percent Recovery	QC Limits
K9805545-006DMS (Batch QC)	gamma-BHC (Lindane)	40	46-127 (P) 28-123 (L)
K9805545-006DMS (Batch QC)	Aldrin	30	34-132 (P) 33-114 (L)
K9805545-006DMS (Batch QC)	Endrin	30	42-139 (P) 39-130 (L)

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Relative percent differences (RPD) between the MS and MSD percent recoveries met QC guidelines with the following exceptions:

Sample	Compound	RPD	QC Limits
K9805545-006 (Batch QC)	Heptachlor	33	31

No action was taken based solely on MS/MSD data.

9. Laboratory Control Sample (LCS)

The following compounds were outside the QC guidelines (P-project, L-laboratory):

Sample	Compound	Percent Recovery	QC Limits
K980821-LCS	gamma-BHC (Lindane)	56	70-130 (P) 40-124 (L)
K980821-LCS	Heptachlor	44	70-130 (P) 40-117 (L)
K980821-LCS	Aldrin	56	70-130 (P) 43-108 (L)
K980821-LCS	Dieldrin	56	70-130 (P) 42-127 (L)
K980821-LCS	Endrin	67	70-130 (P) 46-123 (L)

Results for compounds listed above were qualified as estimated (J). Undetected analytes were also qualified as estimated (UJ).

10. Field Duplicate Analysis

No field duplicate samples were associated with this sample delivery group.

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11. Second Column Confirmation

The relative percent difference (RPD) in reported analyte concentration was greater than 35 percent for the primary and confirmation column for the following samples:

Sample Number	Compound	DB-5 Conc (ug/Kg)	DB-1701 Conc. (ug/Kg)	RPD
98344022	Aldrin	ND	2.40	NA
98344022	gamma-Chlordane	ND	3.72	NA
98344022	Endosulfan I	3.25	ND	NA
98344022	alpha-Chlordane	2.51	0.44	140
98344022	Endosulfan II	5.70	ND	NA
98344022	Endrin	2.40	0.76	104
98344022	DDT	2.59	0.64	121
98344022	Endosulfan Sulfate	ND	5.50	NA
98344022	Methoxychlor	11.08	ND	NA
98344035	Heptachlor Epoxide	ND	1.25	NA
98344035	gamma-Chlordane	0.95	2.53	91
98344035	Dieldrin	0.28	3.36	170
98344035	Methoxychlor	2.43	ND	NA

Differences can arise from analytical interferences on one column. However, the relative percent differences are not deemed significant at the reported concentrations. The lower concentration was reported for each analyte.

12. Sample Analysis

A cursory review of raw data was performed. All laboratory deliverables were present and complete. A duplicate analysis of Batch QC sample K9805545-006 was analyzed, all RPDs were less than 35 percent. The case narrative indicated that the TCMX surrogate recovery for the LCS was outside the QC limits. As all other QC results associated with this SDG were within QC limits, no action was taken. The narrative also notes that the



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MSD result for Endrin in the Batch QC sample was outside the laboratory QC limits because of suspected matrix interference. As the MS and LCS results were within the laboratory QC limits, no action was taken. No other unusual problems were noted.

13. Laboratory Contact

No laboratory contact was required.

Data Assessment

Upon consideration of the data qualifications noted above, the data are ACCEPTABLE for use except where flagged with data qualifiers that modify the usefulness of the individual values

Data Qualifiers

- U - The compound was analyzed for, but was not detected.
- UJ - The compound was analyzed for, but was not detected. The associated quantitation limit is an estimate because quality control criteria were not met.
- J - The analyte was positively identified, but the associated numerical value is an estimated quantity because quality control criteria were not met or because concentrations reported are less than CRDL or lowest calibration standard
- R - Quality control indicates that data are unusable (compound may or may not be present). Resampling and reanalysis are necessary for verification.
- N - Presumptive evidence of presence of material (tentative identification)
- I - Elevated reporting limit due to matrix interference

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COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: Roy F Weston, Inc
 Project: Duwamish River/4000-027-001-2019-38
 Sample Matrix: Sediment

Service Request: K9805599
 Date Collected: 8/18/98
 Date Received: 8/19/98

Organochlorine Pesticides

Sample Name 98344035 Units: ug/Kg (ppb)
 Lab Code K9805599-007 Basis: Dry
 Test Notes

Analyte	Prep Method	Analysis Method	MRL	Dilution Factor	Date Extracted	Date Analyzed	Result	Result Notes
alpha-BHC	EPA 3550A	8081A	1	1	8/21/98	9/9/98	ND	
beta-BHC	EPA 3550A	8081A	1	1	8/21/98	9/9/98	ND	
gamma-BHC (Lindane)	EPA 3550A	8081A	1	1	8/21/98	9/9/98	ND	UJ
Heptachlor	EPA 3550A	8081A	1	1	8/21/98	9/9/98	ND	UJ
Aldrin	EPA 3550A	8081A	1	1	8/21/98	9/9/98	ND	UJ
Heptachlor Epoxide	EPA 3550A	8081A	1	1	8/21/98	9/9/98	ND	
gamma-Chlordane	EPA 3550A	8081A	1	1	8/21/98	9/9/98	ND	
Endosulfan I	EPA 3550A	8081A	1	1	8/21/98	9/9/98	ND	
alpha-Chlordane	EPA 3550A	8081A	1	1	8/21/98	9/9/98	ND	
Dieldrin	EPA 3550A	8081A	2	1	8/21/98	9/9/98	ND	UJ
4,4'-DDE	EPA 3550A	8081A	1	1	8/21/98	9/9/98	ND	
Endrin	EPA 3550A	8081A	2	1	8/21/98	9/9/98	ND	UJ
Endosulfan II	EPA 3550A	8081A	3	1	8/21/98	9/9/98	ND	3UJ B
4,4'-DDD	EPA 3550A	8081A	2	1	8/21/98	9/9/98	ND	
Endrin Aldehyde	EPA 3550A	8081A	2	1	8/21/98	9/9/98	ND	
Endosulfan Sulfate	EPA 3550A	8081A	2	1	8/21/98	9/9/98	ND	
4,4'-DDT	EPA 3550A	8081A	2	1	8/21/98	9/9/98	ND	
Endrin Ketone	EPA 3550A	8081A	2	1	8/21/98	9/9/98	ND	
Methoxychlor	EPA 3550A	8081A	1	1	8/21/98	9/9/98	ND	
Toxaphene	EPA 3550A	8081A	10	1	8/21/98	9/9/98	ND	

B

The MRL is elevated because of matrix interferences

Approved By

Brinda Meuneker

Date

9-17-98

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COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: Roy F Weston, Inc
Project: Duwamish River/4000-027-001-2019-38
Sample Matrix: Sediment

Service Request: K9805599
Date Collected: 8/18/98
Date Received: 8/19/98

Organochlorine Pesticides

Sample Name 98344022
Lab Code K9805599-008
Test Notes

Units: ug/Kg (ppb)
Basis Dry

Analyte	Prep Method	Analysis Method	MRL	Dilution Factor	Date Extracted	Date Analyzed	Result	Result Notes
alpha-BHC	EPA 3550A	8081A	1	1	8/21/98	9/10/98	ND	
beta-BHC	EPA 3550A	8081A	1	1	8/21/98	9/10/98	ND	
gamma-BHC (Lindane)	EPA 3550A	8081A	1	1	8/21/98	9/10/98	ND	u
Heptachlor	EPA 3550A	8081A	1	1	8/21/98	9/10/98	ND	↓
Aldrin	EPA 3550A	8081A	1	1	8/21/98	9/10/98	ND	↓
Heptachlor Epoxide	EPA 3550A	8081A	4	1	8/21/98	9/10/98	ND	4 uI B
gamma-Chlordane	EPA 3550A	8081A	1	1	8/21/98	9/10/98	ND	
Endosulfan I	EPA 3550A	8081A	1	1	8/21/98	9/10/98	ND	
alpha-Chlordane	EPA 3550A	8081A	1	1	8/21/98	9/10/98	ND	
Dieldrin	EPA 3550A	8081A	5	1	8/21/98	9/10/98	ND	5 uI B
4,4'-DDE	EPA 3550A	8081A	3	1	8/21/98	9/10/98	ND	3 uI B
Endrin	EPA 3550A	8081A	2	1	8/21/98	9/10/98	ND	u
Endosulfan II	EPA 3550A	8081A	2	1	8/21/98	9/10/98	ND	
4,4'-DDD	EPA 3550A	8081A	2	1	8/21/98	9/10/98	3	
Endrin Aldehyde	EPA 3550A	8081A	2	1	8/21/98	9/10/98	ND	
Endosulfan Sulfate	EPA 3550A	8081A	2	1	8/21/98	9/10/98	ND	
4,4'-DDT	EPA 3550A	8081A	2	1	8/21/98	9/10/98	2	
Endrin Ketone	EPA 3550A	8081A	2	1	8/21/98	9/10/98	ND	
Methoxychlor	EPA 3550A	8081A	1	1	8/21/98	9/10/98	ND	
Toxaphene	EPA 3550A	8081A	10	1	8/21/98	9/10/98	ND	

B The MRL is elevated because of matrix interferences

Approved By

Wanda Neuneker

Date

9-17-98

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uqT 12/8/98

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: Roy F Weston, Inc
 Project: Duwamish River/4000-027-001-2019-38
 Sample Matrix: Sediment

Service Request: K9805599
 Date Collected: 8/18/98
 Date Received: 8/19/98

Organochlorine Pesticides

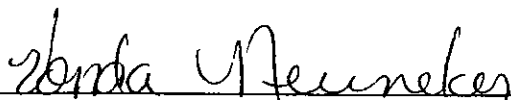
Sample Name 98344025 Units ug/Kg (ppb)
 Lab Code K9805599-011 Basis Dry
 Test Notes D

Analyte	Prep Method	Analysis Method	MRL	Dilution Factor	Date Extracted	Date Analyzed	Result	Result Notes
alpha-BHC	EPA 3550A	8081A	5	5	8/21/98	9/10/98	ND	UI
beta-BHC	EPA 3550A	8081A	5	5	8/21/98	9/10/98	ND	
gamma-BHC (Lindane)	EPA 3550A	8081A	5	5	8/21/98	9/10/98	ND	J
Heptachlor	EPA 3550A	8081A	5	5	8/21/98	9/10/98	ND	J
Aldrin	EPA 3550A	8081A	5	5	8/21/98	9/10/98	ND	J
Heptachlor Epoxide	EPA 3550A	8081A	12	5	8/21/98	9/10/98	ND	
gamma-Chlordane	EPA 3550A	8081A	5	5	8/21/98	9/10/98	ND	
Endosulfan I	EPA 3550A	8081A	5	5	8/21/98	9/10/98	ND	
alpha-Chlordane	EPA 3550A	8081A	5	5	8/21/98	9/10/98	ND	
Dieldrin	EPA 3550A	8081A	15	5	8/21/98	9/10/98	ND	J
4,4'-DDE	EPA 3550A	8081A	15	5	8/21/98	9/10/98	ND	
Endrin	EPA 3550A	8081A	10	5	8/21/98	9/10/98	ND	J
Endosulfan II	EPA 3550A	8081A	10	5	8/21/98	9/10/98	ND	
4,4'-DDD	EPA 3550A	8081A	10	5	8/21/98	9/10/98	ND	
Endrin Aldehyde	EPA 3550A	8081A	10	5	8/21/98	9/10/98	ND	
Endosulfan Sulfate	EPA 3550A	8081A	20	5	8/21/98	9/10/98	ND	
4,4'-DDT	EPA 3550A	8081A	10	5	8/21/98	9/10/98	ND	
Endrin Ketone	EPA 3550A	8081A	10	5	8/21/98	9/10/98	ND	
Methoxychlor	EPA 3550A	8081A	5	5	8/21/98	9/10/98	ND	
Toxaphene	EPA 3550A	8081A	500	5	8/21/98	9/10/98	ND	

D

The MRL is elevated because of matrix interferences and because the sample required diluting

Approved By



Date

9-17-98

1822/020597p

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: Roy F Weston, Inc
 Project: Duwamish River/4000-027-001-2019-38
 Sample Matrix: Sediment

Service Request: K9805599
 Date Collected: 8/18/98
 Date Received: 8/19/98

Organochlorine Pesticides

Sample Name: 98344028
 Lab Code: K9805599-014
 Test Notes: D

Units: ug/Kg (ppb)
 Basis: Dry

Analyte	Prep Method	Analysis Method	MRL	Dilution Factor	Date Extracted	Date Analyzed	Result	Result Notes
alpha-BHC	EPA 3550A	8081A	5	10	8/21/98	9/9/98	ND	UI
beta-BHC	EPA 3550A	8081A	5	10	8/21/98	9/9/98	ND	
gamma-BHC (Lindane)	EPA 3550A	8081A	5	10	8/21/98	9/9/98	ND	J
Heptachlor	EPA 3550A	8081A	5	10	8/21/98	9/9/98	ND	J
Aldrin	EPA 3550A	8081A	5	10	8/21/98	9/9/98	ND	J
Heptachlor Epoxide	EPA 3550A	8081A	5	10	8/21/98	9/9/98	ND	
gamma-Chlordane	EPA 3550A	8081A	6	10	8/21/98	9/9/98	ND	
Endosulfan I	EPA 3550A	8081A	5	10	8/21/98	9/9/98	ND	
alpha-Chlordane	EPA 3550A	8081A	6	10	8/21/98	9/9/98	ND	
Dieldrin	EPA 3550A	8081A	10	10	8/21/98	9/9/98	ND	J
4,4'-DDE	EPA 3550A	8081A	5	10	8/21/98	9/9/98	ND	
Endrin	EPA 3550A	8081A	10	10	8/21/98	9/9/98	ND	J
Endosulfan II	EPA 3550A	8081A	15	10	8/21/98	9/9/98	ND	
4,4'-DDD	EPA 3550A	8081A	10	10	8/21/98	9/9/98	ND	
Endrin Aldehyde	EPA 3550A	8081A	10	10	8/21/98	9/9/98	ND	
Endosulfan Sulfate	EPA 3550A	8081A	10	10	8/21/98	9/9/98	ND	
4,4'-DDT	EPA 3550A	8081A	10	10	8/21/98	9/9/98	ND	
Endrin Ketone	EPA 3550A	8081A	10	10	8/21/98	9/9/98	ND	
Methoxychlor	EPA 3550A	8081A	5	10	8/21/98	9/9/98	ND	
Toxaphene	EPA 3550A	8081A	50	10	8/21/98	9/9/98	ND	

D

The MRL is elevated because of matrix interferences and because the sample required diluting

Approved By

Bonda Neuneker

Date

9-17-98

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